A DESCRIPTIVE STUDY OF CALL CENTRE COMPLAINTS AND THEIR MANAGEMENT IN A WESTERN CAPE EMS

by

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DECLARATION

I, Richard M.F. Spicer, hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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List of Abbreviations

CAD	Computer Aided Dispatch
CLM	Client Liaison Manager
CQI	Continuous Quality Improvement
CT	Cape Town
EMD	Emergency Medical Dispatch
EMS	Emergency Medical Services
HREC	Human Research Ethics Committee
LMIC	Low- and Middle-Income Countries
LRS	Low Resource Setting
NCMP	National Complaints Management Protocol
NCS	National Core Standards
NDoH	National Department of Health
P1	Priority 1
P2	Priority 2
P3	Priority 3
PLO	Public Liaison Officer
SA	South Africa
SAPS	South African Police Services
TQM	Total Quality Management
TCC	Tygerberg Communication Centre
US	United States
USA	United States of America
UCT	University of Cape Town
WCG	Western Cape Government

Part A: Literature Review

Introduction

Emergency conditions have been found to contribute more than half of the global burden of premature mortality as measured by years of life lost (1,2). The role of Emergency Medical Services (EMS) and the scope of paramedic practice have evolved rapidly over the last few decades (3) in order to cope with the high burden of emergency conditions. With the increased scope of EMS practitioners, it is important to consider how quality may be measured.

EMS relies on an Emergency Medical Dispatch (EMD) system to coordinate the activities of emergency care personnel and other first responders in delivering public health assistance and access to other health services (4). The core function and responsibility of EMD systems is to receive and record details that facilitate the dispatching of appropriate EMS resources (4). The African Federation of Emergency Medicine recommends that EMD services should be "timely, safe, locally appropriate, and reliable" (4).

Health services are increasingly focusing on initiatives to improve the quality of care and the patient experience (5). Maintaining the focus on service delivery requires that health services (including EMS) continuously measure and react to various performance indicators (6,7). The precise performance indicators that are used may vary between settings such as pre-hospital and in-hospital, or between well-resourced systems and resource limited settings (8,9).

The performance measures for EMS systems have traditionally been response times with little emphasis on quality of care (2,10,11). EMS organisations within high-income countries often target a P1 (very urgent case) response time of less than 8 minutes (8,12). The Western Cape performance targets for the 2017-18 financial year included the indicator that 65% of priority one (P1) cases should be serviced (emergency personnel will arrive on scene) within 15 minutes in urban areas (13), yet this was only met in less than 60% of cases in 2018.

Search strategy

Searches for relevant literature were made using EBSCOhost - referencing the PubMed, CINAHL, and Academic Search Premiere databases, and ScienceDirect databases for articles published after 1January 1994 and prior to 31 December 2019. Additional literature searches were made via Google Scholar which identified articles in the ResearchGate and Emerald Insight databases. The various databases made automated recommendations for related articles and these were also investigated for relevance. The reference lists of relevant articles were also reviewed to locate additional literature.

Search terms utilised varied over the search period and were adapted to meet the needs of the individual sections of the literature review. Examples of the search terms used included "Customer

complaint behaviour", "Healthcare complaint management", "Emergency Medical Services", "Health service evaluation", "Patient feedback" in various combinations.

The titles and abstracts of the search results were reviewed to determine relevance. If the full-text articles were not immediately available for potentially relevant data sources, an additional search was attempted - using the author name(s) and article title – to locate the full-text versions of the articles. Articles for which full-text versions could not be obtained were excluded from further consideration, as were those not available in English.

Quality Improvement and Patient Safety

The international health community has endorsed the need for active management of patient safety (15). Whereas continuous quality improvement (CQI) may focus on a wider range of elements including productivity and cost-effectiveness, patient safety is dedicated to ensuring that patients do not experience an adverse event (15). CQI approaches improvement science with a focus on recognising and defining the problems and then implementing potential improvements in rapid testing cycles to determine their impact on the overall system and is utilised by the Institute for Healthcare Improvement, one of the leading patient safety organisations (16).

Various reporting and triggering processes may prompt healthcare organisations to review their performance and start investigations, but complaints provide a valuable customer perspective on the patient experience (2,15). International healthcare complaint handling practices are not unanimous in their approaches, but have similar core best practice principles (17). The right (of patients) to complain is supported by legislation, that meets an organisational commitment to patient centred service provision objectives (18). Complaint systems should be timely, offer redress and apology, and promote improvement and learning to limit future reoccurrences (18).

Complaints as a component of quality improvement

Clinical measures of quality of care have often been linked to a limited number of well-researched focus areas where the EMS impact on patient outcome is more easily defined such as CPR, trauma, acute coronary events and endotracheal intubation (2,6). While broader quality indicators have been developed in other healthcare settings (2,19), these are not always directly transferable or applicable to the pre-hospital setting. Howard et al. (2) performed a modified Delphi study in 2019, to identify recommendations for EMS quality indicators suitable for the South African (SA) context. Their recommendations include the reports of adverse events in various measures to which complaints and other forms of customer feedback would contribute (2).

A wide array of information sources can help to identify adverse events (20). Patient satisfaction surveys, customer complaints, quality assurance compliance audits, and individual patient record audits are just some of the available data sources (21,22). However, customer feedback represents the only part of this spectrum relating to the dignity and respect with which the patients were treated (23). The information obtained from complaints can help to identify unique weaknesses within the service, which can then lead to the implementation of potential corrective actions and improvements (24,25). The value of complaints to monitor service delivery should not be underestimated (26–28).

The Constitution of SA and the Patients' Rights Charter state that all SA residents have the right to medical care as well as the right to complain about the medical care they received (29). The National Department of Health published the National Complaints Management Protocol (NCMP) for the Public Health Sector of SA in May of 2013, which guides government facilities and employees on complaint processes (27). The NCMP defines a complaint as "the dissatisfaction/ displeasure/ disapproval/ discontent expressed verbally or in writing by any person about the actual health services being rendered and/ or care being provided within the public health sector" (27).

In the EMS domain, complaints can be lodged by any person who deals with the service. These can include patients, patients' families or friends, bystanders and other third-party agents, medical professionals dealing with the patient (such as referring/ receiving health facility staff), or even by EMS staff themselves. Complaint analysis should incorporate all EMS service users and stakeholders, and as such the term "customer" is used in this document to denote all parties that could complain - inclusive of patients.

The National Core Standards (NCS) for Health Establishments in South Africa supports the enforcement of the NCMP (27). In its annual report, the Western Cape Government (WCG) Health Department regularly cites the successful complaint resolution rate, and the rate for which this is achieved in under 25 days, as key performance indicators for some of the departmental programmes as evidence of compliance with the NCS requirements (13). The 2017/18 WCG Health annual report indicates that the WC Health Department serviced 14.1 million primary care patient contacts, admitted 285 936 patients in district hospitals and received 5 268 complaints, of which 91.4% were resolved within 25 working days (13).

Service quality, whether it be good or bad, may be easily discerned by customers but difficult for an organisation to deliver (28). Dissatisfaction occurs when a customer's perception of the service experience is less than their expectation (30).

Behaviour and decisions leading to initiating a complaint

When deciding to lodge a complaint, complainants will often have one or more broad objectives that they intend to achieve with their actions (27). These include acknowledgment, desire for an apology, desire for an explanation, or the desire to prevent the recurrence of similar problems for themselves or other people (27,31).

Although many customers may be dissatisfied with a service, most customers will not complain (32). Dissatisfaction alone is often insufficient motivation to initiate a complaint by the dissatisfied person (30,33). The action taken by a dissatisfied person is influenced by many other factors including their emotional state, the perceived seriousness of the incident, their individual personality traits, knowledge of the complaint pathway and its ease of use, and their expectation of improvement or redress by the complaint recipient (33,34).

The dissatisfied customer may utilise other actions or available pathways (as displayed in figure 1) other than that of lodging a complaint. Some customers may choose to complain publicly which could include lawsuits, news media and social media platforms (33). Other dissatisfied customers may choose to complain privately and restrict themselves to voicing their dissatisfaction with their friends and family (33). Some may also access public protection and regulatory platforms (33), which could include the Health Professionals Council of South Africa or an ombudsman.

The combination of the trigger factors for complaint behaviour and the available pathways results in a situation that limits the number of complaints that organisations will receive. Complaint rate research within commercial retail and service enterprises indicates that only 4% to 10% of dissatisfied customers will actively complain directly to the company (35). Health sector complaint rates are commonly low (32). Only 3.6% of adverse events identified through a review of medical records, from 14 hospitals in the Netherlands, resulted in complaints being lodged (36). An Israeli telephonic survey study found that only 9.5% of patients had complained about their medical service (most of whom utilised informal complaint pathways), despite 25% of the patients having due cause to complain (32).

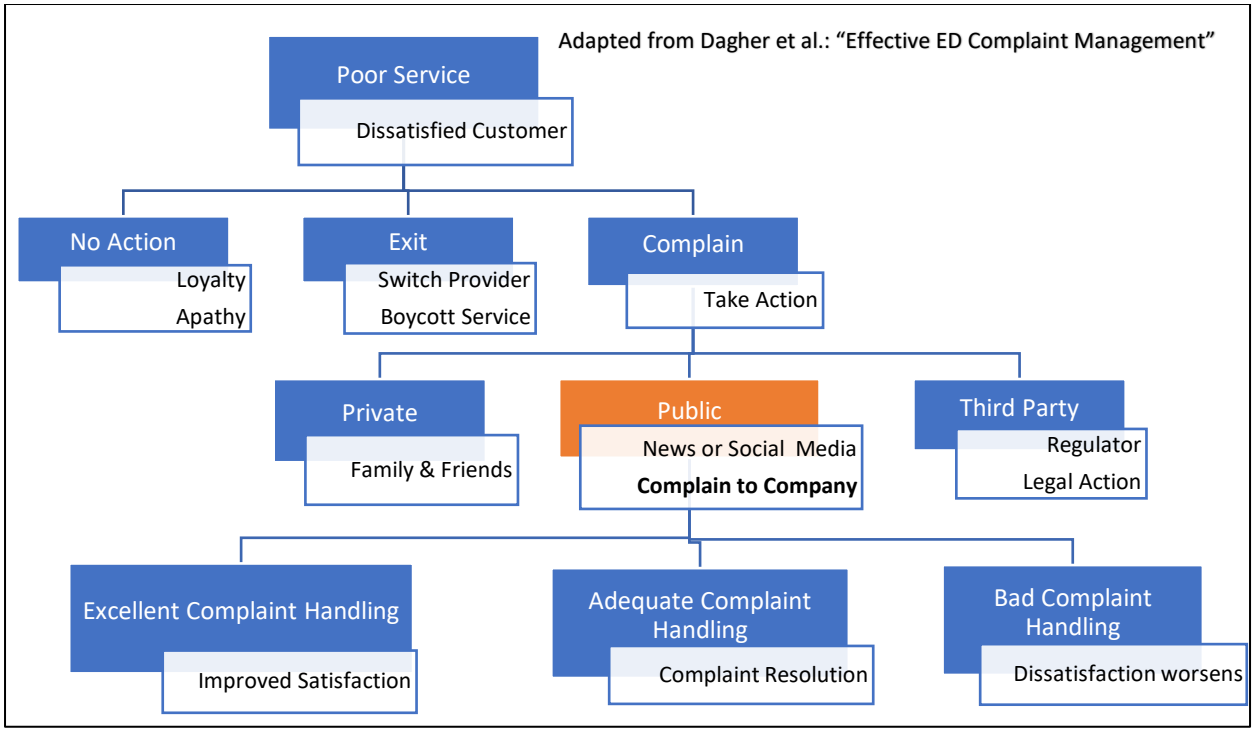

Figure 1: Possible consumer responses to perception of poor service quality
(*The diagram demonstrates that complaints made publicly and directed towards the company represents just one of many potential actions following a service event.*)

Lariveta and Brouard (37) raise the question of the value of complaints as source of valuable information due to the low proportion of complaints received compared to the number of dissatisfied customers. They cited the differences in characteristics between complainers and non-complainers - thereby raising concern over the representativeness of the complainer subgroup - but state that representativeness is not required if complaints are utilised as a part of a holistic approach to information gathering (37). In their review of Swedish patient complaints, Jangland et al. (38) support the view that complaints offer information with a high validity despite representing a small proportion of total patient contacts.

Bismark et al. (24) compared patient characteristics between complainants and non-complainants following adverse event in New Zealand hospitals in 1998 and found that only "4% of serious preventable adverse events triggered complaints", despite the finding that 51% (n=254) of the adverse events were judged to be preventable.

The rarity of complaints following an adverse event is concerning. Patient knowledge and the ability to separate the original medical condition from the adverse event is suggested as one contributing factor towards the low complaint rate (24). Patient knowledge of complaint reporting pathways is also thought to reduce the complaint rate (24).

Poor socioeconomic status and increased age decreased the likelihood of complaint behaviour in the New Zealand study, while severe adverse events occurrence and associated morbidity and mortality triggered increased complaint behaviour (24). The disparity in socioeconomic and educational profiles between users of public and private health services in SA suggests that public health services may receive proportionally fewer complaints compared to private health services in accordance with Bismark's (24) findings.

Complaint Handling

The NCMP recommends using specific guiding principles in complaint management which include accessibility, cost effectiveness, impartiality, confidentiality, responsiveness, and speed (27).

The process of complaining should be free, transparent, and simple for the complainant (27,35). The organization should be respectful of the rights and dignity of all parties involved by ensuring that complaint management personnel show empathy and maintain confidentiality (27). The complaint handling staff should be adequately trained to value complainant perspectives and treat the complainants without judgement (27). Managers should regularly track data from the complaints department on individual complaints and trends in order to analyse service weaknesses and implement corrective action where possible (27,32).

If an organisation responds well to complaints, the company is able to reassure its customers that it is committed to resolving service issues and improving customer service (39). Perceived dedication to ensuring good customer relations can be a valuable commodity for organisations when dealing with their business partners (40).

A major limitation in the value of patient experiences is a lack of widespread expertise in the collection and analysis methods of patient experiences by health care workers (41). Gleeson et al. (41) performed a systematic review of complaint management processes to inform quality improvement (within a variety of healthcare facilities in the US, UK and Netherlands) and found that despite acknowledging the value of patient feedback, the staff in many facilities reported unfamiliarity with formal quality improvement techniques that would assist in achieving effective change and prevention of unwanted incidents recurring, and that even when patient feedback resulted in changes being made, the impact thereof was not measured.

Patient Feedback

Although patient satisfaction and patient complaints may seem to be similar concepts, they do have some differences. Patients are prompted and requested to provide information when providing

feedback (for example in completing a survey), while complaints are made spontaneously (42). A satisfaction survey will have a higher response rate and will be able to identify areas of service that generate satisfaction as well as dissatisfaction. Complaints usually require a larger degree of dissatisfaction (in combination with other factors) to prompt the desire to complain within the patient or other interested party. This may lead to a perception that complaints tend to focus on outliers of service incident trends (37). Within the quality improvement and patient safety fields, outlier information is still highly relevant due to the associated risks for the patients (24).

Although patient satisfaction data can identify service areas that may need improvement in general, satisfaction data can also have an inherent limitation based on the type of survey tool utilised (23). Satisfaction surveys with predetermined categories and rating scales may simplify the compilation of aggregated data, but may limit the ability to discern the specific factors leading to customer dissatisfaction (23,41).

Complaints have a greater reliance on free form narratives (27,42,43), which can lead to a deeper understanding of the factors causing dissatisfaction. The large variety of complaint types creates a limitation itself, whereby staff may not be able to aggregate the data adequately enough to identify and monitor trends due to a lack of expertise in data aggregation and coding (23,41). Organisations should carefully plan how they want to collect patient feedback. The satisfaction surveys should align with their organisational goals and be specific for the aspects they want to evaluate, while also be considerate of the analysis team's expertise and ability to evaluate and analyse the results (41).

Conflicting evidence exists as to whether patient feedback results in effective change and quality improvement, but complaint measures are shown to be more responsive than satisfaction surveys to effect change (23,44).

In 2004, Persse et al. (45) evaluated telephonic customer satisfaction surveys in an urban EMS system in the United States (US) and found that despite overall satisfaction rates of 95.6%, areas of dissatisfaction included public health education on the patients' conditions, explanation of EMS practitioner tasks, and perceived prolonged response times (10% of patients were dissatisfied due to perceived long response times).

Peyravi et al. (46) reported on an EMS patient satisfaction survey in Iran, and found that in their sample of 1096 patients, only 1.8% of patients were dissatisfied with medical technician behaviour and 1.1% were dissatisfied with response times.

There is a paucity of literature surrounding patient satisfaction in EMS. The two studies mentioned above, while highlighting important aspects, cannot be directly compared due to the differences in EMS settings.

WCG EMS description

The Emergency Medical Services (EMS) provide a vital service by providing access to healthcare services, either by providing on scene medical care (primary cases) or by assisting with inter-facility transfer (IFT) of patients. The Emergency Medical Dispatch (EMD) centre plays a central role in the operations of EMS by receiving service requests and coordinating the activities of mobile resources.

The Western Cape Government (WCG) EMS provides ambulance services to five primarily rural regions plus the urban Cape Town metropolitan region – which is subdivided into four EMS districts each with their own bases, vehicles, personnel and budgets. One (of six) provincial EMD centre coordinates EMS activities for the greater Cape Town area [personal communication S. De Vries, 2020].

The EMD operates with separate roles for call takers and dispatchers and utilises computer aided dispatch (CAD) technology that automatically records all dispatch information. Pre-hospital medical qualifications are not required for call-takers and dispatchers employed in WCG EMDs.

WCG EMDs receive requests for services either directly from the "10177" emergency telephone number or the requests are rerouted from other general emergency call-centres. The call taker can visually identify data entry fields on the CAD system, but no prompts for specific queries or algorithms related to the clinical condition are available to act as decision-making aids in determining the medical prioritization of the case.

In 2018, the Cape Town (CT) region had an estimated population of 3.8 million people distributed over an area of approximately 400 square kilometres (14). WCG Health reported that in the 2017/18 financial year, EMS attended 492 303 emergency cases, including 155 373 inter-facility transfers (31.6% of all cases) and 133 019 urban priority 1 (P1) cases of which 59.5% were serviced within the 15-minute response time target (13). WCG Health received 5 268 hospital based complaints during this period, of which 91.4% were resolved within 25 working days (13). No accurate data on EMS complaints was publicly available.

WCG EMS complaint process

The Client Liaison Manager (CLM) operates out of the CT EMD centre and is the sole person responsible for managing, investigating and documenting all complaints of a general nature in the Cape Town region. Complaints specifically related to clinical management are investigated and handled by members of a separate component - Continuous Quality Improvement (CQI). During the investigation phase, the CLM will frequently request assistance from various other managers who supervise the unit or person implicated by the complainant, or the CQI if there is an element of clinical management noted in the complaint.

Complaint procedure for the EMS is not currently well advertised and the public does not always know how to appropriately contact the EMS (or the CLM) regarding the laying of a complaint and it is not uncommon for the public to lodge complaints via the "10177" emergency telephone line [personal communication N. Newman, 2020]. No dedicated toll-free number currently exists for accepting complaints specifically against the EMS. This is important considering the fact that unlike regular health care facilities, patients do not physically attend the EMS call centre, whereas in-patient facilities may have comment and complaint drop-boxes or have dedicated personnel that interview patients about their experiences. The WCG Health does have a general complaints call centre.

When a potential complainant contacts the CT EMD, they are provided with the CLM's email address and requested to lodge the complaint electronically, or if the complainant does not have email access, the complaint is accepted verbally and recorded by the EMD staff and then forwarded to the CLM. EMD staff do not have easy access to standardised complaint forms while assisting telephonic complainants. In contrast to public complaints, most of the facility managers at community health centres and hospitals have been provided a standardised complaint form and are able to email the complaint documentation directly to the CLM due to previous communications and knowledge of the complaint procedure.

Complaint analysis taxonomies

The ability to aggregate, analyse and determine trends in the complaint data for various purposes is extremely important (23). Trend analysis is useful in internal quality improvement programs, external review processes for safety and compliance monitoring, as well as for the ability to effectively compare research outputs (23,43,47). The generation of these trends has been hampered by a lack of a universally applied standardised complaint taxonomy (5,42,43).

Montini et al. (42) developed a complaint coding taxonomy for health services in 2008 by reviewing eight previous complaint coding taxonomies, then testing their taxonomy on complaints received by two tertiary teaching hospitals in Boston. The resultant taxonomy consists of 22 patient complaint codes and a further 5 codes to identify the professional grouping of the person implicated by the complaint (42). During the complaint analysis phase assessing 1 216 complaints, it was noted that an average of 1.5 different issues within the taxonomy were raised from each complaint with at least one complaint that highlighted 9 separate concerns (42). They found that in-hospital complaints for unprofessional conduct resulted in 19% of complaints, and that poor communication between the carer and patient resulted in a further 17% of complaints (42). Treatment delays accounted for 11% of complaints (42). Other notable findings were that 78% of the recorded cases were not directed at the hospital's physicians, and that the complaints were more likely to be lodged if multiple negative

experiences occurred that eventually exceeded the patients' level of tolerance (42). This study did demonstrate that using a standardised taxonomy could allow for improved analysis and provide a better framework for targeting system-based improvements in safety and patient satisfaction (42).

Another patient complaint coding taxonomy was developed by Reader et al. in 2014 using a systematic review process to identify 59 relevant publications (which included the study by Montini et al.), and the data was then synthesized to create a coding taxonomy (43). Reader's taxonomy grouped the complaint coding into three domains containing seven categories and twenty-six sub-categories (Table 1). The first domain – clinical – primarily aligns with patient safety elements in literature. The second domain – management – relates to management concern and can be linked with aspects of infrastructure, care access and institutional management. The third domain – relationships – focuses on interpersonal skills, emotional care and patient rights (43). Reader found that the issues within complaints were distributed fairly evenly across the three domains listed (43).

Reader's taxonomy includes some additional complaint codes (22 complaint codes in Montini's taxonomy vs 26 codes in Reader's), but does not incorporate a differentiation of profession for the implicated person (42,43). While Montini and Reader both developed their taxonomies for the general health services, Montini's study referenced complaints registered at tertiary academic hospitals, while Reader's complaint data encompassed a wider array of clinical settings (42,43).

However, neither taxonomy was developed considering the decentralised organisational structure and context of EMS. The EMS structure precludes some types, and adds other types, of patient interactions with various support staff as well as inferring limitations in clinical assessment and management.

In contrast to Montini's study in which 22% of complaints targeted physicians, Reader et al. noted that when the complaints assessed the qualifications or roles of the people triggering the complainant action (which were reported in 33 of the 59 studies), 86% of the 36 612 primary complaints were directed at doctors (43). Although 49% of the studies included by Reader et al. only listed a single service issue per complaint, the mean was 1.49 issues per complaint with a range of 1.05 – 3.19 (43).

Despite the contextual differences, a coding taxonomy is vitally important in order to adequately organise and analyse the complaints which are often emotive and qualitative in nature with widely diverse phraseology used by different customers (25,43). Analysing the customer issues, whether transcribed from verbal comments or submitted in written format, allows for the discernment of the core issues in a more consistent fashion (25,47).

Table 1: Complaint Taxonomy

Domain	Category	Sub-category
Clinical	Quality	Examinations
		Patient Journey
		Quality of care
		Treatment
	Safety	Safety incidents
		Skills and Conduct
		Error in diagnosis
		Medication errors
Management	Institutional Issues	Bureaucracy
		Environment
		Finance and billing
		Service Issues
		Staffing and Resources
	Timing and Access	Access and admission
		Delays
		Discharge
		Referrals
Relationships	Communication	Communication breakdown
		Incorrect information
		Patient-Staff dialogue
	Humaneness / Caring	Respect, dignity and caring
		Staff attitudes
	Patient Rights	Abuse
		Confidentiality
		Consent
		Discrimination

Adapted from Reader et al. "Patient complaints in healthcare systems: A systematic review and coding taxonomy"

Since Reader's taxonomy was developed in 2014, the taxonomy has been applied by Mattarozzi et al. (48), Harrison et al. (25) and by Reader's own team of colleagues (5) who have all individually reported on the tool validity at the domain and category level, but the sub-category level may require additional refinement for wider application due to potential ambiguities that arise during content analysis and coding. All of these studies also reported on the lack of an inherent severity rating in the taxonomy and the need for further development (5,25,48)

International descriptions of EMS Complaints

Twenty years ago, Delbridge et al. (49) recognised the role of EMS performance evaluation as an essential component of EMS development which included the need for continuous evaluation of clinical outcomes, patient discomfort and patient (dis)satisfaction (26).

Complaints regarding suspected or confirmed clinical errors, billing errors, and others are well researched within the hospital and clinic setting (43). General patient safety and clinical intervention safety in EMS are also starting to receive regular attention in the research environment (50).

EMD measures of call handling times, accuracy of case prioritization (under/over-prioritization), and ambulance response times are fairly common, but there is a paucity of information available on the complaints received by EMS services specifically, especially in LMIC.

Curka et al. (51) retrospectively studied complaints in a single urban EMS system (Houston Fire Department) within the US over a three-year period, 1990-1992. Houston Fire served a population of 2 million people over 600 square miles (51). 30% of the complaints were received from patients directly, with an additional 39% originating from a patient's family or bystanders (51). Poor interpersonal skills accounted for 34% of the complaints received in the study. Delayed response times only accounted for 1.6% of the complaints (51). Curka et al. (51) comment on the low complaint rate in their study, suggesting a measure of unreliability as complaint rates are usually positively associated with an increase in socioeconomic status, yet the inverse appeared to be depicted in their study. Socioeconomic data was not included in the data collection methods, and their supposition is based on assumed geographic distribution of wealth in the city.

Colwell et al. (52) reviewed EMS complaints between 1993 and 1998 in Denver (USA) with a population of 500 000 and spread over 150 square miles. They found only 286 complaints in a six-year period, with an incidence rate of 9.3 per 10 000 responses (52). Complaint originators were again primarily private individuals with 65% of complaints reported by patients, family members or friends (52). Congruent with the results of Curka's study, the complaint category with the highest incidence was related to "rude behaviour" (23%) despite accounting for a lower proportion of the cases, while timeliness only resulted in 5% of the complaints received (52). They noted the difference between incidents resulting in complaint lodgement compared to litigation claims (52). Vehicular accidents accounted for 72% of legal claims, but only 5% of complaints were allocated to a category for poor driving skills (52) indicating a variation in factors triggering complaint and litigation actions (52).

Conclusion

The role of complaint management as part of health performance management processes, quality improvement processes and adverse event reporting is well-supported in the currently available literature. However, there is a paucity of information on EMS complaints with regard to epidemiological data internationally as well as locally. Consistent complaint analysis using validated tools have been limited by a prior lack of appropriate coding taxonomies.

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Part B: Dissertation

A DESCRIPTIVE STUDY OF CALL CENTRE COMPLAINTS AND THEIR MANAGEMENT IN A WESTERN CAPE EMS

For submission to the African Journal of Emergency Medicine

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Introduction

Emergency medical services (EMS) play a vital role in addressing the high burden of disease posed by emergency conditions in low-to-medium income countries and it is vital to ensure that EMS care is of a high quality. Complaints and their management are an important mechanism in addressing individual patient concerns and ensuring accountability to the public. Expanding the role of complaints to effectively affect system-wide quality improvement requires knowledge of trends based on aggregated complaint data. This study aims to describe the volume and nature of complaints received by an urban EMS organisation in the Western Cape.

Methodology

A retrospective analysis was performed of all non-clinical complaints received for the 2018 calendar year by the call centre of a public EMS in Cape Town, South Africa. All complaint documents were collected and collated with the original case dispatch information. Complaints were categorised according to a standardised complaint coding taxonomy published previously. Complaint investigation outcomes and recommendations were analysed by themes identified during the study.

Results

A total of 156 complaints were received which referred to 172 patients. Complaints originated primarily from healthcare providers (72%) and patients or public (22%). Inter-facility transfers (73%) generated the most complaints. Encoding of complaint narratives revealed 302 individual service issues, which were classified into taxonomy derived domains (Clinical – 36%; Management – 44%; Relationship – 20%). The “Management” domain highlighted delay issues, accounting for 38% (116/302).

Conclusion

In this urban EMS, the majority of complaints are related to delays. Complaints were primarily lodged by other healthcare providers. Complaint rates lodged by patients and public are low, and would suggest that a unified and well publicised complaint mechanism is necessary, in order to increase public involvement in service quality improvement. Further research is recommended to validate a taxonomy for EMS complaints specifically.

Introduction

In low- and middle-income countries (LMIC), the mortality rates from emergency conditions contribute more than 50% to years of life lost [1]. Emergency medical services (EMS) in these settings needs to play an important part, in conjunction with other interventions, in managing emergency conditions contributing to the burden of disease and injury [1,2]. EMS organisations must demonstrate effectiveness, efficiency, equity and quality of care to achieve these goals [2].

EMS performance evaluation has traditionally focussed on compliance with response time targets [3], but there is a drive towards expanding the performance indicators, motivated by the realisation that quality of care is broader than just clinical management, and should encompass patient experiences as a measure of quality [2]. Feedback on patient experiences (whether complaints or satisfaction) provide unique and valuable perspectives regarding the quality of care that patients receive from EMS organisations and individual practitioners [4].

In South Africa (SA), all patients are afforded the right to complain about the health care received [5,6] and health care facilities in the public sector are required to adhere to complaint management process guidelines issued by the National Department of Health (NDoH) [6]. Emergency Medical Services for the public sector (i.e. those without medical insurance or resources to pay for private healthcare) are provided by the Western Cape Government (WCG) EMS, and co-ordinated from the Cape Town (CT) Emergency Medical Dispatch (EMD) centre. They provided coverage for about 3.8 million people [7] and received 223 628 emergency calls in 2018 [personal communication S. De Vries, 2020]. Within the WCG EMS calls are classified as Priority 1 (P1) indicating that very urgent care is required, for which WCG EMS targets a 15-minute response time [3]. All other emergencies are Priority 2 (P2), with a 60-minute target response time [3]. Priority 3 (P3) is utilised for planned patient transport for attending out-patient services.

In order to better track and analyse healthcare complaints, a coding taxonomy was developed by Reader et al. [8] in 2014, and validated for use within the in-hospital context. The taxonomy classifies complaints into three domains, seven categories and twenty-six sub-categories [9-11]. Although not specifically designed for the EMS context, Reader's taxonomy [8] seems the most appropriate tool currently available for this purpose, although a broader interpretation of certain sub-categories may be required to accommodate the prehospital environment.

Despite the importance of complaints, there is a paucity of available literature relating to the nature and number of complaints received by EMS organisations, including EMD, and none that could be identified specifically related to low resource settings or the SA context. This study aims to describe the nature and management of complaints received by the CT EMD as part of an urban EMS system.

Methods

The WCG EMS has established two separate departments for managing complaints namely a single individual responsible for investigating complaints received directly by the EMD centre (routed via telephonic or emails correspondence) and a Continuous Quality Improvement (CQI) department that deals with complaints of a clinical nature. There is no inclusive system to attract or identify complaints, and those regarded as minor may well be disregarded or dealt with immediately by other individuals.

This retrospective, cross-sectional descriptive study describes the number and types of complaints received by the CT EMD call centre over the 2018 calendar year. These complaints only relate to call

centre and dispatch issues, since all clinical complaints (i.e. relating to clinical care) are managed by a separate clinical quality assurance process.

Data was collected from a complaints register which provided patient details and an overview of the outcomes. Further detailed information was obtained from email threads and documents relating to the complaint, and from the computer aided dispatch (CAD) database system which provided details around the original call and dispatch. The service issues, derived from both original complaint forms and investigation reports, in each case were classified (by the principal investigator, and discussed with other authors when controversial) according to the complaint taxonomy developed by Reader et al. [8]. A maximum of three classifications of service issues were allowed for each complaint.

The recommendation outcomes for each complaint case were encoded into categories (developed by the principal Investigator) through the use of content analysis. Encoded data was analysed using basic descriptive statistics using ®MS Excel.

Ethics approval to conduct this research was granted by the University of Cape Town Human Research Ethics Committee (HREC ref: 490/2019), and facility approval provided by the Western Cape Government: Department of Health (NHRD Ref: WC_201908_009).

Results

A total of 156 complaints were identified in the 2018 calendar year, distributed throughout the year [range 6-20 per month]. Several complaints referred to multiple patients resulting in 172 different patients being included in the study. The 156 complaints represent an incidence rate of 7 complaints per 10 000 calls received by the EMD in the study period.

Complaint Demographics and Dispatch Information

Of the 156 complaints analysed, 112 (72%) complaints were lodged by health care facilities (including doctors, nurses and administrative clerks), 35 (22%) by private individuals (i.e. patients, family members or bystanders) and 9 (6%) were lodged by organisations (e.g. private EMS, fire department and news media). The available source data was incomplete with many missing, untraceable or undocumented data elements.

Of the 172 patients central to the complaints, 125 (73%) patients required interfacility transportation between health care facilities, whilst 47 (27%) required transportation from either their private residences or other primary incident locations. Complaints lodged by healthcare facilities predominantly related to cases referred from 24 hour community health centres (45, 41%), district hospitals (25, 23%), maternity units (15, 14%) or clinics (13, 12%), while the receiving facility was a district hospital for 78 (70%) or regional hospital in 31 (28%).

Computer Aided Dispatch data for the 172 patients indicated that 34 (20%) were recorded as P1 cases, 93 (54%) as P2, 6 (3%) recorded as P3 cases, and incident priorities could not be determined in 39 (23%) cases. For those cases where response time could be assessed (109, 63%), there seemed to be significant delays (P1 transfers had a mean of 137 minutes (SD ±94.1), P2 transfers had a mean of 318 minutes (SD ± 238)).

Complaint types

Complaints were classified according to sub-categories within Reader's taxonomy (Table 1) with sub-totals calculated for each category and domain. Fifty-seven (36%) of the 156 complaints lodged identified a single service issue, 55 (35%) highlighted two and 45 (29%) complaints highlighted three

service issues, totalling 301 different service issues. The proportional distribution of service issues across the three domains varied when stratified by the complaint originator (Figure 1).

Table 1: Complaint Taxonomy including service issue findings (n; %)

Domain	Category	Sub-category
Clinical (sub-total = 109; 36.2%)	Quality (sub-total = 31; 10.3%)	Examination (2; 0.7%)
		Patient Journey (17; 5.6%)
		Quality of care (10; 3.3%)
		Treatment (2; 0.7%)
	Safety (sub-total = 78; 25.9%)	Safety incidents (47; 15.6%)
		Skills and Conduct (9; 2.9%)
		Error in diagnosis (22; 7.3%)
		Medication errors (0; 0%)
Management (sub-total = 133; 44.1%)	Institutional issues (sub-total = 17; 5.6%)	Bureaucracy (0; 0%)
		Environment (1; 0.3%)
		Finance and billing (1; 0.3%)
		Service Issues (1; 0.3%)
		Staff and resources (14; 4.7%)
	Timing and access (sub-total = 116; 38.5%)	Access and admission (45; 15.0%)
		Delays (64; 21.3%)
		Discharge (2; 0.7%)
		Referrals (5; 1.7%)
Relationships (sub-total = 59; 19.6%)	Communication (sub-total = 26; 8.6%)	Communication breakdown (18; 6.0%)
		Incorrect information (6; 2.0%)
		Patient-Staff dialogue (2; 0.7%)
	Humaneness/ Caring (sub-total = 24; 8.0%)	Respect, dignity, and caring (13; 4.3%)
		Staff attitudes (11; 3.7%)
	Patient Rights (sub-total = 9; 3.0%)	Abuse (1; 0.3%)
		Confidentiality (1; 0.3%)
		Consent (0; 0%)
		Discrimination (7; 2.3%)

Adapted from Reader et al. "Patient complaints in healthcare systems: A systematic review and coding taxonomy"

The "Clinical" domain raised concerns over various safety issues (patients injured in accidents while in EMS care, critically-ill patients that deteriorated while waiting for EMS arrival, and inappropriate disposition of patients contributing to delayed definitive care), incorrect prioritisation by EMD call-takers (interpreted under the "Errors in diagnosis" sub-category), and disruption of the continuity of care (due to delays or inappropriate patient disposition decisions).

The "Management" domain highlighted the extent of delays (classified in either, but not simultaneously, the "Access and admission" or "Delay" sub-categories due to interpretation ambiguity in the EMS context) which together accounted for 109 (36.2%) of the 301 total service issues, and resource issues relating to specialised equipment required to manage some incidents.

The "Relationship" domain highlighted concerns over discrimination (which was associated with insufficient availability of resources for special needs patients, and a perception that EMS personnel were reluctant to initiate clinical management inside the homes of informal settlement residents), perceived unprofessional behaviour and/or attitudes of EMS personnel. Call-takers were sometimes perceived to lack a supportive attitude to guide callers through the call-logging process, and callers

did not always feel that call-takers captured relevant case details accurately because of miscommunications and communication breakdowns.

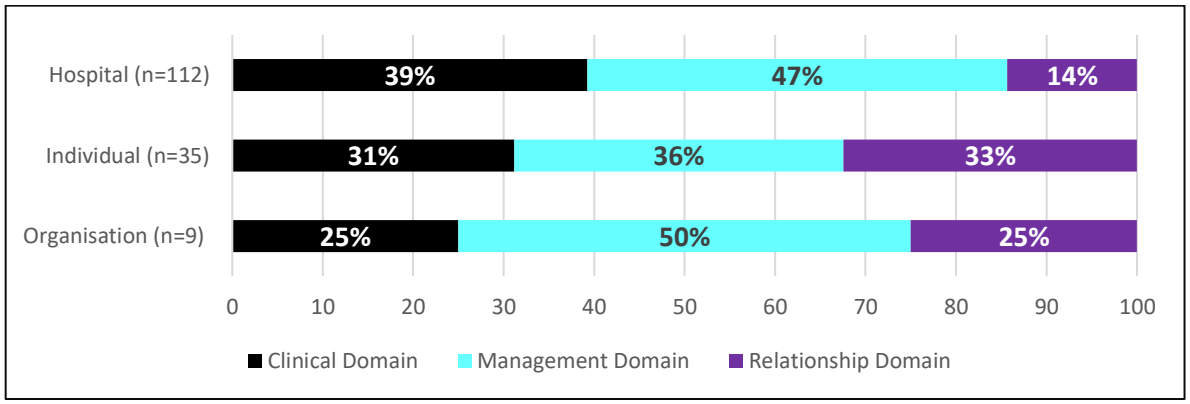

Figure 1: Percentage of service issues per domain stratified according to complaint originator

Complaint handling processes

The precise communication pathway (i.e. telephonic communication, email correspondence or third-party referral) initially utilized to lodge a complaint could not be verified due to poor record keeping. The majority (119/156; 77%) of complaints were acknowledged within two working days, while delays of three or more days were noted for 12 (8%) complaints and 25 (16%) of the complaints did not have acknowledgment dates available. The methods by which investigation feedback was provided to complainants was via email in 73 (47%), by in-person visits in 21 (13%), or telephonically in 4 (3%), and could not be verified for 57 (37%) of the complaints.

During the complaint handling process a total of 256 documented recommendations or statements were made to address the 156 complaints, with each recommendation classified as shown in Table 2. Figure 2 shows the frequency distribution (n, %) of each category.

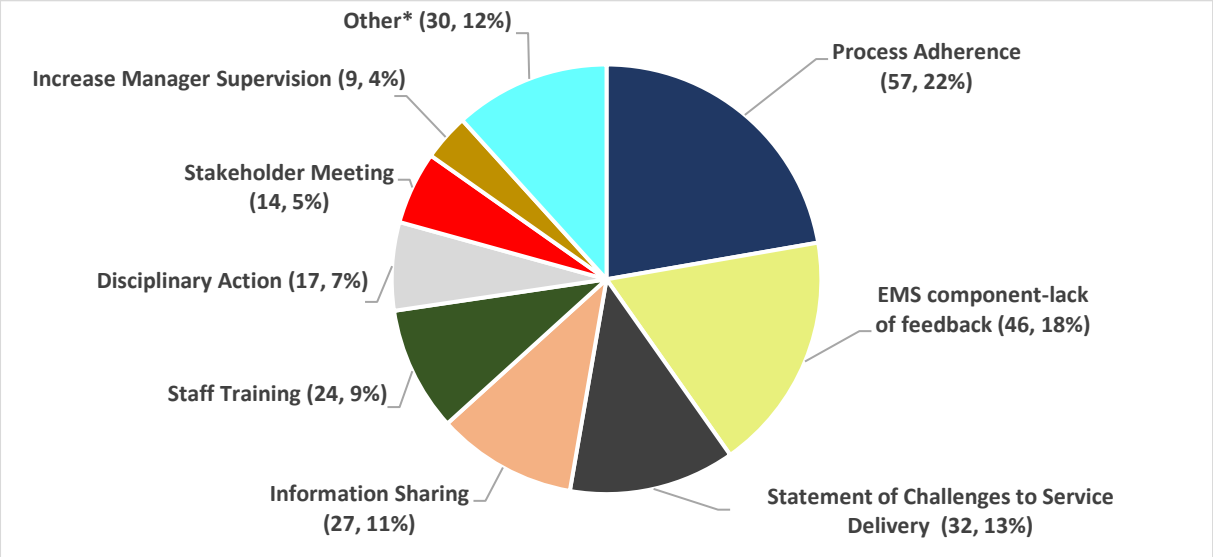

Figure 2: Types of recommendations made in reply to complaints
**Includes Process refinement/design, referral to other EMS components, and miscellaneous statements*

Table 2: Examples and explanations of recommendation categories

Process Adherence	Examples of current procedural adherence issues: 1) Call takers not capturing patient vital signs in interfacility transfer cases; 2) Urgent transfers to be booked (arranged) by clinical personnel; 3) Escalation policy compliance (dealing with repeat calls for same incident); 4) Monitoring of call waiting time by dispatchers
EMS component-lack of feedback	No recommendation was finalised - a request for investigation assistance and input was made to the EMD/operational managers or continuous quality improvement department; however, no feedback was received by complaint department afterwards
Statement of Challenges to Service Delivery	Complaint feedback to complainant includes statement regarding barriers to EMS ability to perform optimally: 1) High EMS case load; 2) Police required to escort EMS into incident area; 3) Low EMS resource availability (lack of vehicles or staff)
Information Sharing	Examples of information sharing statements made in customer feedback: 1) Inform facility of EMD supervisor's telephone number for queries; 2) EMD to inform hospital of reason for call cancellation/delay and vice versa; 3) Inform public of EMS challenges through open days held at local community events; 4) Inform public/callers on Red (danger) zones limiting/slowing EMS access to area
Staff Training	Staff (refresher) training recommended for: 1) medical prioritization; 2) professional conduct; 3) telephone etiquette; 4) coaching on application of escalation policy;
Disciplinary Action	Counselling session or formal disciplinary action recommended for non-compliance with a SOP or professional misconduct.
Stakeholder Meeting	Examples of stakeholders with whom meetings would be requested: 1) South African Police Services 2) Hospital managers; 3) Community leaders/ ward councillor;
Increase Manager Supervision	EMD manager to monitor: 1) Clinics and office hour facilities between 14h00-16h00 to prevent transfers after facility closure; 2) Call waiting times exceeding 3-hours;
Process Design	1) CAD/data management support team to review & streamline dispatching system processes; 2) Design booking checklist; 3) Improve monitoring tools
Other / Miscellaneous	1) Request equipment audit by EMS operations; 2) EMS not at fault/ complaint invalid; 3) CQI or EMD/Operational managers assisted with investigation and provided feedback to the CLM; 4) No recommendation made;

Key: EMD (Emergency Medical Dispatch), CLM (client liaison manager), CAD (computer aided dispatch), EMS (Emergency medical services), CQI (Continuous Quality Improvement)

Discussion

The main role of a complaint handling system is to hold an organisation or individual accountable for their actions [4,12] . Whilst complaints may be perceived as undesirable, valuable information can be obtained from the collection and analysis of complaints [13]. Healthcare organisations are required to be more patient-centred and should use patient complaints and customer feedback as a quality performance measure [4].

The complaint rate in this study (7 per 10 000 cases) was slightly lower than reported by both Colwell et al. [14] with 9.3 per 10 000 EMS cases (Denver, USA), or Curka et al. [15] with 11 per 10 000 EMS cases (Houston, USA). In addition to the lower overall complaint rate, the low proportion of private complainants (22%) in this study contrasts to these other studies whereby complaints lodged by patients and/or their family members accounted for 65% [14] and 70% [15] of complaints respectively.

The low complaint rate suggests local barriers to individual complaint behaviour which will need to be overcome in order to align with the SA NDoH guidelines that promotes accessibility of complaint processes [6]. The lack of a dedicated complaint hotline, as well as the absence of complaint lodging guidelines, may be contributing to the overall low complaint rates [12,13].

Complainants often have multiple objectives when lodging a complaint, one of which is the desire for acknowledgment [6]. Timeous acknowledgement demonstrates to the public that organizations value their complaints, thereby helping to resolve their dissatisfaction [6]. Our data suggests that EMS is meeting the recommended timeframe for acknowledgement with 77% of all complaints being acknowledged within two working days [6]. Unfortunately, the proportion of cases concluded within 25 days could not be determined which is a concern and a metric that should be collected to assess the complaints process [12].

Although the Reader's taxonomy utilised has not been validated in the context of pre-hospital complaints [8] there were several useful findings, despite (as with previous studies) difficulty in detailed classification of service delivery issues at the sub-category level due to an overlap of issues [9-11]. Other researchers have shown that individual complainants tend to relate to quality of care, while health care providers' complaints focus on deviations from standard practice processes [16] . This trend was also found in this study as the "Relationship" domain (which focuses on quality of interaction) represented 32% of all service issues lodged by individual complainants, but only contributed to 14% of all healthcare provider service issues. This indicates that higher complaint rates by individuals would likely increase the ratio of "relationship" domain issues [13-15].

The small number of complaints under the "Clinical" domain likely reflects the separate CQI department which deals with clinical complaints. In this EMD, prioritisation decisions are made by the initial call-taker based on basic guidelines. Prioritization accuracy can be improved with appropriate decision support systems [17,18]. The findings of this study suggest that there is a need to identify which decision-making aid is most appropriate to support call-takers in this context [18].

This EMS system, although arguably one of the better resourced public EMS systems on the continent [19,20], is still very much under resourced to provide for the needs of the population. Delays in EMS arriving on scene or at a hospital are routine, and although there is a focus on P1 response time targets (46.8 % in under 15 minutes in 2018) which is admirable for such a system, P2 response times are far from targets and result in many delays [21]. An escalation system is in place to deal with repeat calls about patients still unserved [21]. Our findings that complaints around delays are prevalent is therefore unsurprising (and the significance of delays for the complaint cases seem plausible from the available data), perhaps only surprising in the relatively few individuals who complain which likely

reflects low expectations of the health system. Research from other low resource settings suggests there is overuse of EMS resources for less urgent patient transportation, and this is likely an issue in this setting where public transport after hours is limited, and private transportation is not accessible to many communities [22]. A further aspect, highlighted by these findings with delay in interhospital transfers being a frequent source of complaints by healthcare providers, is finding the balance in prioritising interfacility transfers, and primary calls. This is an international issue, and one that is difficult to solve and often the decision rests on the call taker whether a panicked family member calling for help should be prioritised over a healthcare professional requesting an urgent transfer [23,24]. The majority of complaints were from healthcare providers, and reflected issues with interhospital transfers, largely from health centres and clinics (without admission capacity) to hospitals for further management, thus likely representing critical patients needing timeous referral.

McAlpine showed in an as yet unpublished thesis that call takers at this EMD tend to over-triage pointing largely to deficits in training, guidelines and dispatch systems to aid call taker decisions, all of which are congruent with the high proportion of dispatch safety issues, as well as training and procedural recommendations found [25].

Complaint feedback statements included an explanation of contextual challenges, investigation outcomes, as well as procedural and improvement recommendations. There did not seem to be clear use of formal quality improvement frameworks which could guide the process of improvement [12,26]. Utilisation of any framework would promote clarification of recommendations from desired strategic concepts to functional, and practical procedures that can be implemented and monitored for effect [12,27,28].

Statements made under recommendations and/or customer feedback which were categorised under “Process adherence” (22%) indicates a focus on assigning failures to human error [29]. The rate of recommendations for disciplinary action (7%) and/or training (9%) also supports the supposition for human error leading to the service failure [29].

Gleeson et al. [26] highlighted that a lack of time and resources for staff to collect and analyse data on patient experience’s limits improvement efforts. The complaint department may be facing a barrier to effective quality improvement by being understaffed, considering that 156 complaints were collected in one year, which equates to roughly three new complaints received per week, all managed by one individual. These inherent time limitations may contribute to reliance on potentially simplistic assumptions during investigation processes without regard for underlying factors and system issues [26,30]. Another concern is the not insignificant number of complaint investigations that seem to have stalled due to lack of investigation and feedback by other role-players, and here one wonders what the authority of the complaint manager is, and how to engender more support for the process within the organization [26,30].

Literature suggests that while providing explanations and apologies to complainants may be effective in resolving individual complaints [6,12], there is a lack of evidence for effective system wide quality improvement based on patient and customer feedback due to poor implementation and monitoring of implemented intervention effectiveness [12,26,28].

Complaints are inherently heterogenous in their content [8] and the NDoH guidelines promote the use of a standardised complaint form to achieve more consistent capturing of complaint data [6]. Case by case feedback, large amounts of missing data, and inconsistencies in terminology all appeared to hamper statistical analysis and reporting to senior management, misaligning with the NDoH guidelines [6]. Investment in infrastructure and support is recommended to improve the complaint department’s

effectiveness. A standard complaint taxonomy relevant to the EMS environment would assist in complaint analysis and reporting [10,12].

There are several limitations to this study. The extent of missing data particularly around individual patients and incomplete source documents hampered data collection, yet we believe that this small sample is reflective of the complaints process and gives useful insight to the issues not only in the complaints process, but in the EMD system. The complaints presented may not represent the entire spectrum of dissatisfied customers, since there is no clear complaints process or mandatory reporting of complaints, and may represent just those from persistent complainants, or those judged worthy of investigation. Complaints were interpreted according to a taxonomy which has not yet been validated in the EMS context, but we would advocate that this is useful in this context. And finally interpreting the outcomes of complaint investigations and the resulting recommendations was not a simple process which could perhaps be aided by the use of a quality improvement framework.

Conclusion

This study reviews EMS call-centre service complaint patterns. The complaints primarily originated from healthcare providers and interfacility transfers were most frequently involved. The majority of service issues were related to delays in accessing assistance. Patient complaint rates were low and investigations into what strategies would most improve patient feedback in this setting should be undertaken. Complaints were acknowledged timeously, but the recommendations subsequent to investigation of complaints suggest a greater focus on correcting human error with limited interventions directed at system level improvement. As EMS systems develop in low resource settings, and particularly on the African continent, developers will look to established systems such as the WC EMS and we believe these findings, and the importance of setting up a complaints system upfront are vital [31,32]. Further research is required to develop a validated complaint taxonomy that may better represent service issues in the EMD centre and the pre-hospital environment.

Conflict of interest

Two authors (RS, BB) are employed by the organisation reviewed in this study, but did not receive any funding related to the research. No other conflict of interest exists for any authors.

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Part C: General Declaration

Ethics

I declare that this research was conducted with the ethical approval from the University of Cape Town Human Research Ethics Committee (HREC ref: 490/2019) and was conducted in a fully ethical manner. HREC approval letter attached as part of the Addenda.

Facility Approval provided by Western Cape Government: Department of Health (NHRD ref: WC_201908_009)

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analysed during the current study are not publicly available as they contain confidential information. The research approval was also limited to the information being released to the research team and not to be made public.

Competing Interests

Two authors (RS, BB) are employed by the organisation reviewed in this study, but did not receive any funding related to the research. No other conflict of interest exists for any authors.

Funding

All research was self-funded by RS.

Authors Contributions

RS as the primary author collected, collated and analysed the data and was the primary contributor to the writing of the manuscript.

PH was substantially involved in the conception and design of the study and was involved in regularly revising and contributing to the manuscript.

BB was involved in aspects of the study design, acquisition of the data and in regularly revising and contributing to the manuscript.

Acknowledgements

The authors would like to thank Mr Nicholas Newman for his selfless contributions to the introductory discussions and data collection process.

Part D: Addenda

A descriptive study of call centre complaints and their management in the Western Cape EMS

Student: Richard Michael Frank Spicer

Division of Emergency Medicine, Department of Surgery,

University of Cape Town

SPCRIC001

Supervisor: A/Prof Peter Hodkinson

Division of Emergency Medicine, Department of Surgery,

University of Cape Town

Co-supervisor: Ms Beatrix Bester

Emergency Medical Services, Department of Health

Western Cape Government

This study is in partial fulfilment of the requirements for the degree

Masters in Philosophy: Emergency Medicine (Patient Safety)

Declaration

I, Richard Michael Frank Spicer, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and the neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

I authorize the University to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

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Date: 25 June 2019

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Addendum A 49

List of Abbreviations

CAD	Computer Aided Dispatch
EMS	Emergency Medical Services
ePCR	Electronic Patient Care Report
MDT	Mobile Data Terminal
PLO	Public Liaison Officer
TCC	Tygerberg Communication Centre
UCT	University of Cape Town
WCG	Western Cape Government

Background

The Tygerberg communications centre (TCC) serves as an entry point for emergency calls from the public to access emergency medical services (EMS) and the public health sector within the Cape Town area and its surroundings. The TCC receives telephonic requests for services including outpatient transport, inter-facility transfer, emergency ambulance and rescue services (1). Other than service requests, the centre also receives other general communications including compliments and complaints. Although the TCC welcomes customer feedback as one of the means of measuring service delivery, there is currently no dedicated telephone number or even an email address for the receipt of complaints. Health facilities and health professionals are often able to trace the contact details of an appropriate person responsible for complaint handling. However, the public often resort to utilising the medical emergencies number – 10177 (for requesting an ambulance) – in order to report complaints.

Customer service evaluations are vital within all industries, whether it be in the retail, hospitality or health care industries. Customer service relies on feedback to measure success and identify areas for improvement in meeting the demands of the individual customer and the industry as a whole (2). The health services have traditionally utilised general business management approaches to customer care with a focus on customer satisfaction. Management systems within health are shifting towards the patient safety approach (3). This entails a detailed evaluation of complaints with a focus on identifying system based errors (2), which then allows for the designing and instituting of a safer system for patients accessing health services (4,5).

Existing research on operations within emergency communication centres commonly focusses on the structure of call-taking and prioritisation algorithms through linguistic analysis, factors affecting call-taking and prioritisation (6), communication centre performance measures (e.g. time from call receipt to dispatch – according to various categorisations such as case priority or case type) and resource availability, monitoring, and utilisation (7,8). Currently there is little available literature describing the types of complaints that are received by EMS communication centres, despite the importance of this to improve services.

In the Western Cape Government (WCG) EMS, complaint handling is performed on an individual case basis, without any real overall monitoring and reporting of the complaints lodged and the management thereof.

In the TCC, three broad categories are utilised to determine the management pathway for complaints received through any means (telephonic, email, management request). If complaints relate directly to the TCC functions, a single public liaison officer (PLO) is responsible for investigating complaints and maintaining records of such investigations. If the complaint relates purely to the EMS clinical management of the patient, the complaint is referred to the continuous quality improvement (CQI) department. Issues relating to professional behaviour and inter-personal skills of any EMS employee are jointly investigated by the PL and the operational manager of the accused.

In cases where multiple calls are received relating to any one patient or incident, the repeat calls are notated and the urgency of resource allocation to attend to the incident is increased. Although these calls may be considered as a complaint, they are most often satisfactorily resolved by the manager and dispatcher on duty at the time of complaint. These situations are not routinely recorded as complaints and are consequently not considered for further investigation. However, if the service recipient is still dissatisfied and submits a separate complaint, it is recorded as such and an investigation will be performed.

Research into the complaints received by the TCC will describe and quantify the major issues experienced by the users of the EMS system in the local area, as well as how they are resolved. This will enable TCC and EMS management to develop and enforce strategic system wide interventions designed to address preventable errors form occurring beyond individual complaint resolution (9). These interventions may lead to a reduction in the volume of complaints and improve service delivery (3). Tools developed for complaint analysis within the study may potentially be adapted for continuous monitoring of complaint management by TCC personnel in the future.

Research Question

What is the nature and management of call centre related complaints received by the Tygerberg Communications Centre of the Western Cape Emergency Medical Services?

Objectives

1. Describe the process by which complaints are received, recorded and investigated
2. Analyse and describe the complaints received in the study period relating to:
    a. Types of complaints received
    b. Complainant demographics
    c. Dispatch information
    d. Investigation findings
    e. Investigation outcomes

Methodology

This study is a retrospective, quantitative descriptive analysis of records.

Study population

All complaints – related to non-clinical service delivery issues – received by the WCG EMS's Tygerberg Communication Centre during the 2018 calendar year. The calendar year was selected to account for seasonal variation in call rates and peak periods that may have influenced service delivery and thereby altered consumer experiences and satisfaction. Estimated number of complaints is 150 to 200, of which roughly two thirds are likely to be from facilities and about one third from the public.

Sampling Technique

All consecutive complaint cases received by the public liaison officer over the designated time period will be reviewed.

Data Collection and Analysis

Electronic records of all complaints investigations during the 2018 calendar year will be obtained from the TCC, along with all the relevant supporting documents whether in electronic or hardcopy format. These electronic records form a stand-alone database and only filtering according to specified date range will be required to identify all appropriate cases. Supporting

documentation will be reviewed where necessary to ensure that the database records of the investigation are accurate and complete.

The complaint investigation records are referenced according to the complaint receipt date as well as the case reference number assigned during the original request for emergency medical assistance. The case reference number will be utilised to request the cases from the WCG EMS case registry database to draw additional computer aided dispatch (CAD) system information as required (Appendix A).

The complaint data and the CAD data will be combined on an electronic Microsoft Excel spreadsheet. The data will then be coded to facilitate categorisation and analysis and described using standard descriptive analysis for frequencies, measures of central tendency, and association between elements.

Inclusion Criteria

- All recorded complaint cases received via the TCC over the period of interest (January 2018 – December 2018).
- All patient age groups and clinical conditions will be included.
- All complaint cases investigated by the PLO, either with sole responsibility for investigation or with shared responsibility for investigation in conjunction with other departments.

Exclusion Criteria

- Complaint investigations in which the PLO did not participate and were referred to other departments for investigation.
- Investigations with significant critical fields with missing data will be excluded if supplemental data sources are unable to allow adequate data retrieval.

Ethical considerations

The EMS database is already registered with UCT HREC, and an application will be made to HREC for the study, as well as from EMS. The complainants (patients/ family/ interested third party) will be protected in the study process through the following mechanisms

- No names (or other patient or complainant details) will be collected or transcribed from the records into the researcher's database for further analysis.

- Case records will only be referred to according to the reference numbers. Reference numbers need to be retained in order to facilitate cross-referencing and data collection from multiple sources.
- Electronic records will be stored in a password protected file on a password protected computer.
- Any hardcopy records will be stored in a locked cupboard inside a locked room (that only the researcher has access to open) when not being utilised.
- At the end of the study, all hardcopy records will be destroyed by shredding.

Limitations

- Public knowledge of the processes involved in EMS related complaint reporting is likely limited. Without a dedicated complaint line, the number and variety of complaints that have been received from members of the public may not represent the full extent of service delivery complaints.
- The research is conducted retrospectively, relying on the quality of pre-existing records and data fields.
- The initial investigation as well as the analysis and coding of the complaint reports are conducted by individual reviewers. While the investigator and researcher will both attempt to be objective and professional in their assessments of the complaints, analysis may not be entirely free of personal bias.
- Preliminary investigation of the complaints process suggests that there is an essentially binary decision as to what is regarded as a complaint worthy of investigation. It would appear that there is no process to either collect, document or investigate minor complaints so there is no real denominator of all complaints to work off.

Proposed Timeframe

2019	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan
Agreement with Supervisor	x									
Summary Proposal Development	x									
Full Proposal Development		x								
Ethics application and Facility approval			x							
Data collection, capture				x						
Data coding & analysis				x	x					
Write up					x	x	x			
Submission to supervisors and corrections							x	x	x	
Final submission										x

Proposed Budget

(To be borne by the research student entirely)

Item	**Unit Cost**	**Unit number**	**Total Cost**
Travel	R10/km	200	R 2,000
Printing	R2,50/ page	200	R 500
Editing	R5/ page	100	R 500
Miscellaneous			R 2,000
Total			**R 5,000**

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Ethics Approval

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E53-46 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6626
Email: shuretta.thomas@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

05 August 2019

HREC REF: 490/2019

A/Prof P Hodkinson
Emergency Medicine
F51, OMB

Dear A/Prof Hodkinson

PROJECT TITLE: A DESCRIPTIVE STUDY OF CALL CENTRE COMPLAINTS AND THEIR MANAGWEMENT IN THE WESTERN CAPE EMS (MPHIL CANDIDATE: MR R SPICER)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30 August 2020.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

The HREC acknowledge that the student, Richard Spicer will also be involved in this study.

Yours sincerely

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PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE
Federal Wide Assurance Number: FWA00001637.
Institutional Review Board (IRB) number: IRB00001938
This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical

Facility Approval

Western Cape Government
Health

DIRECTORATE: **EMERGENCY MEDICAL SERVICES**
ENQUIRIES: **Dr Shaheem de Vries**
• shaheem.devries@pgwc.gov.za
☎: +27 21 508 4523

ATTENTION: MR Richard Spicer

RE: A DESCRIPTIVE STUDY OF CALL CENTRE COMPLAINTS AND THEIR MANAGEMENT IN THE WESTERN CAPE EMS

Dear Mr Spicer

Your request on the above matter refers.

Thank you for the request to conduct research within the Western Cape Government Emergency Medical Services. Your proposal has been evaluated by the Emergency Medicine Division Research Committee and has been recommended for approval by this office.

I am therefore pleased to inform you that such approval is hereby granted.

I wish you well in your endeavor and trust that you will keep this office and its department informed of your findings when these become available. I look forward to the insights that your research will afford us.

Yours sincerely

Signature Removed

Dr Shaheem de Vries
Head: Emergency Medical Services
Western Cape Government Health

Date: 16th August 2019

WCG Health: EMS – Office of Director, 11 Alexandra Road, Pinelands, 7405
Private Bag X24; Bellville ☎ (+27) 21 508 4523 🖷 (+27) 21 931 8490
www.capegateway.go.v.za

Instructions for submission to journal

The journal selected for publication is the African Journal of Emergency Medicine (AfJEM), as this journal primarily publishes research impacting emergency medicine and healthcare systems in low resource settings. The authors believe this study's results and recommendations are applicable to an African audience.

Instructions to authors for submission to the African Journal of Emergency Medicine can be found at the following site:
https://www.elsevier.com/journals/african-journal-of-emergency-medicine/2211-419x/guide-for-authors